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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
ITO.0046US

In Re Application Of: Tyler A. Lowrey and Ward D. Parkinson

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/633,872	August 4, 2003	Thong Quoc Le	21906	2827	5269

Invention: Read Bias Scheme for Phase Change Memories

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on  
**October 3, 2006**

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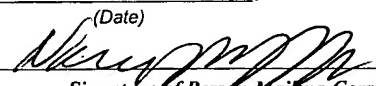
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Dated: **October 30, 2006**

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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:

Tyler A. Lowrey, et al.

Serial No.: 10/633,872

Filed: August 4, 2003

For: Read Bias Scheme for Phase Change  
Memories

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Art Unit: 2827

Examiner: Thong Quoc Le

Atty Docket: ITO.0046US  
(P16201)

Assignee: Intel Corporation

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**APPEAL BRIEF**

Date of Deposit: October 30, 2006

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## **TABLE OF CONTENTS**

REAL PARTY IN INTEREST .....	3
RELATED APPEALS AND INTERFERENCES .....	4
STATUS OF CLAIMS .....	5
STATUS OF AMENDMENTS .....	6
SUMMARY OF CLAIMED SUBJECT MATTER .....	7
GROUND OF REJECTION TO BE REVIEWED ON APPEAL .....	9
ARGUMENT .....	10
CLAIMS APPENDIX.....	11
EVIDENCE APPENDIX.....	13
RELATED PROCEEDINGS APPENDIX.....	14

**REAL PARTY IN INTEREST**

The real party in interest is the assignee Intel Corporation.

**RELATED APPEALS AND INTERFERENCES**

None.

### **STATUS OF CLAIMS**

Claim 1 (Rejected).

Claim 2 (Canceled).

Claims 3-7 (Rejected).

Claim 8 (Canceled).

Claims 9-14 (Rejected).

Claim 15 (Canceled).

Claim 16 (Rejected).

Claims 17-19 (Canceled).

Claims 1, 3-7, 9-14, and 16 are rejected and are the subject of this Appeal Brief.

## **STATUS OF AMENDMENTS**

All amendments have been entered.

## SUMMARY OF CLAIMED SUBJECT MATTER

In the following discussion, the independent claims are read on one of many possible embodiments without limiting the claims:

1. A method comprising:

forming a phase change memory element (Figure 1, 10) having a holding voltage (Figure 3,  $V_H$ ) that is at least 80 percent of the threshold voltage (Figure 3,  $V_{TH}$ ) of the element and a holding voltage greater than about .9 volts (specification at page 8, line 4 to page 9, line 4).

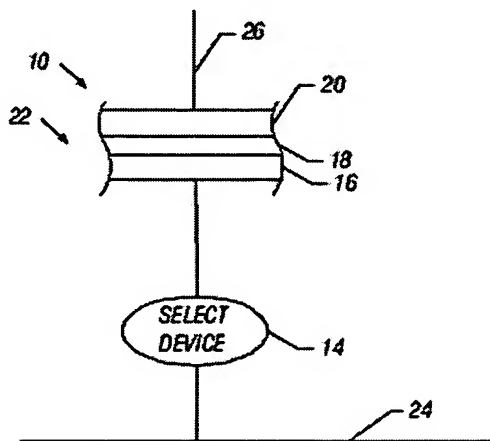


FIG. 1

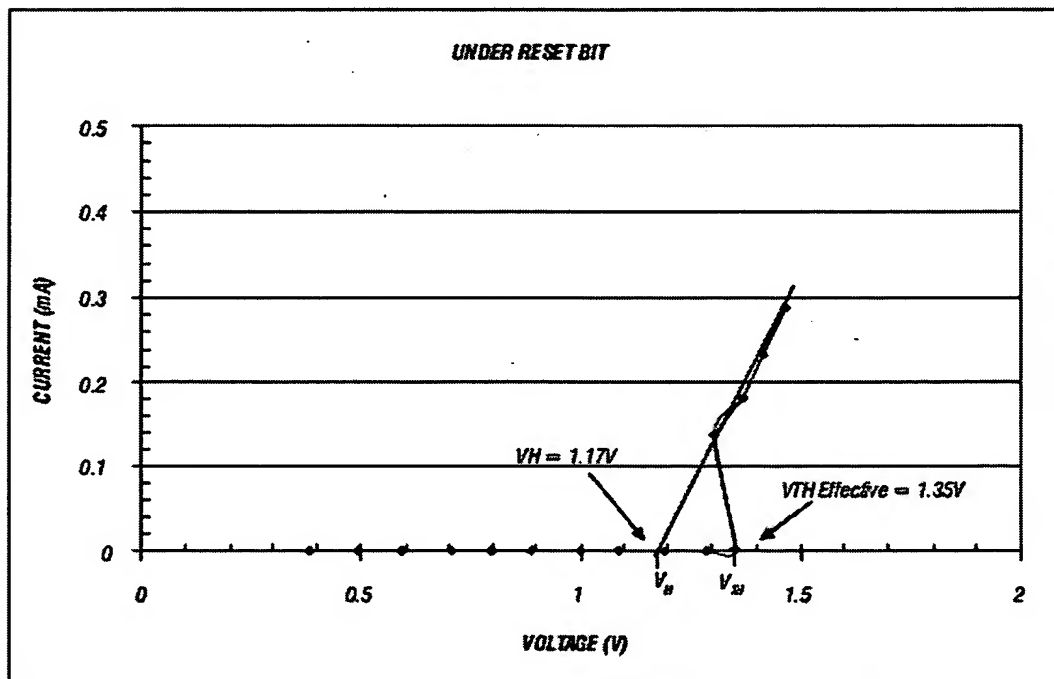


FIG. 3



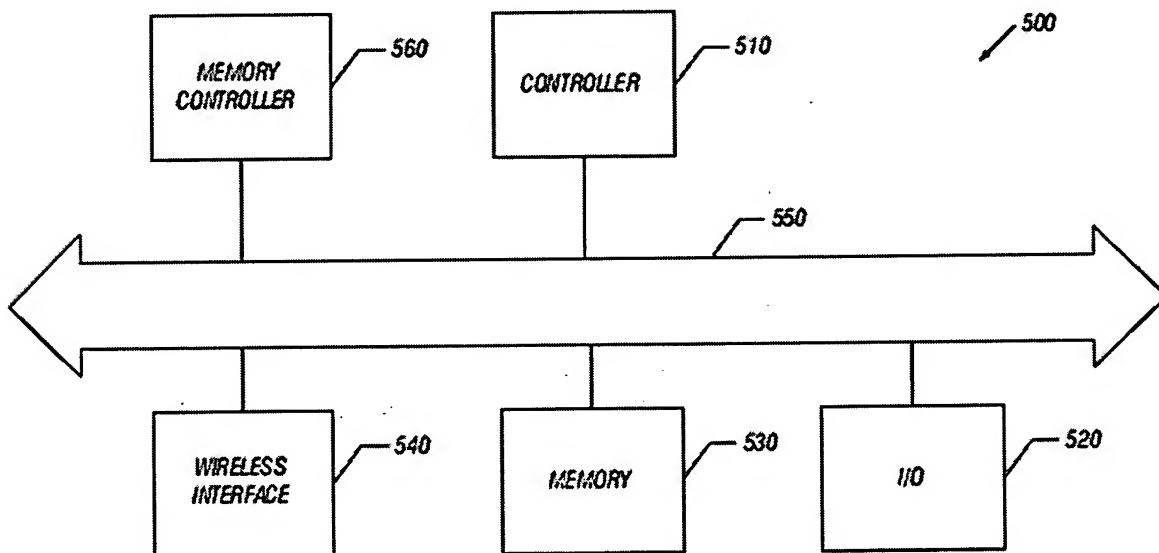
6. An apparatus comprising:

a phase change memory element (Figure 1, 10) to be read with a voltage greater than or equal to the threshold voltage (Figure 3,  $V_{TH}$ ) of the element, said element having a holding voltage (Figure 3,  $V_H$ ) that is at least 80 percent of the threshold voltage of the element (specification at page 8, line 4 to page 9, line 4).

11. A system comprising:

a processor (Figure 6, 510); and

a phase change memory element (Figure 6, 530) having a holding voltage (Figure 3,  $V_H$ ) that is at least 80 percent of the threshold voltage (Figure 3,  $V_{TH}$ ) of the element and said holding voltage being at least about .9 volts (specification at page 8, line 4 to page 9, line 4).



**FIG. 6**

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Whether claims 1, 3-7, 9-14, and 16 are anticipated under 35 U.S.C. § 102(e) by Lowrey (2004/0113137).

## ARGUMENT

A. Are claims 1, 3-7, 9-14, and 16 anticipated under 35 U.S.C. § 102(e) by Lowrey (2004/0113137)?

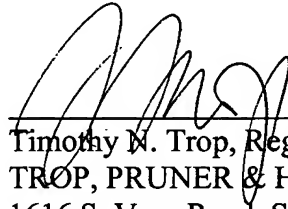
With respect to the rejection of the claims over that cited Lowrey application, it is noted that the citation to paragraph 120 is insufficient to meet the claims which talk about a phase change memory element having a voltage greater than .9 volts.

What is being discussed in paragraph 120 is the holding voltage of a select device for the memory element, not the holding voltage of the memory element. Thus, the cited material is of no moment to what is claimed.

Applicant respectfully requests that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

Date: October 30, 2006



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## **CLAIMS APPENDIX**

The claims on appeal are:

1. A method comprising:  
forming a phase change memory element having a holding voltage that is at least 80 percent of the threshold voltage of the element and a holding voltage greater than about .9 volts.
3. The method of claim 1 including forming a phase change memory element to have a threshold voltage that does not vary by more than 10 percent with programming currents varying as much as two times.
4. The method of claim 1 including forming a phase change memory element including a phase change material between a pair of electrodes.
5. The method of claim 4 including forming a phase change material with a lower electrode of titanium silicon nitride.
6. An apparatus comprising:  
a phase change memory element to be read with a voltage greater than or equal to the threshold voltage of the element, said element having a holding voltage that is at least 80 percent of the threshold voltage of the element.
7. The apparatus of claim 6 wherein said element includes an upper and a lower electrode and a phase change material between said electrodes.
9. The apparatus of claim 6 wherein the phase change memory element has a threshold voltage that varies by less than 10 percent with varying programming currents.

10. The apparatus of claim 7 wherein said lower electrode includes titanium silicon nitride or carbon.
11. A system comprising:
  - a processor; and
  - a phase change memory element having a holding voltage that is at least 80 percent of the threshold voltage of the element and said holding voltage being at least about .9 volts.
12. The system of claim 11 wherein said wireless interface includes a dipole antenna.
13. The system of claim 11 wherein said element includes an upper and lower electrode and a phase change material between said electrodes.
14. The system of claim 13 wherein said lower electrode includes titanium silicon nitride.
16. The system of claim 11 wherein the phase change memory element has a threshold voltage that does not vary by more than 10 percent with programming currents varying by as much as two times.

## **EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.